

(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织  
国际局



(43) 国际公布日:  
2005年3月24日(24.03.2005)

PCT

(10) 国际公布号:  
WO 2005/027094 A1

- (51) 国际分类号<sup>7</sup>: G10L 19/00
- (21) 国际申请号: PCT/CN2003/000790
- (22) 国际申请日: 2003年9月17日(17.09.2003)
- (25) 申请语言: 中文
- (26) 公布语言: 中文
- (71) 申请人(对除美国以外的所有指定国): 北京阜国数字技术有限公司(BEIJING E-WORLD TECHNOLOGY CO., LTD.) [CN/CN]; 中国北京市西直门外大街甲143号凯旋大厦C座4层, Beijing 100044 (CN).
- (72) 发明人;及
- (75) 发明人/申请人(仅对美国): 潘兴德(PAN, XingDe) [CN/CN]; 任为民(REN, WeiMin) [CN/CN]; 中国北京市西直门外大街甲143号凯旋大厦C座4层, Beijing 100044 (CN).
- (74) 代理人: 北京同立伟业专利代理有限公司(BEIJING LEADER PATENT AGENCY CO., LTD.); 中国北京市海淀区花园路13号道隆商务会馆, Beijing 100088 (CN).

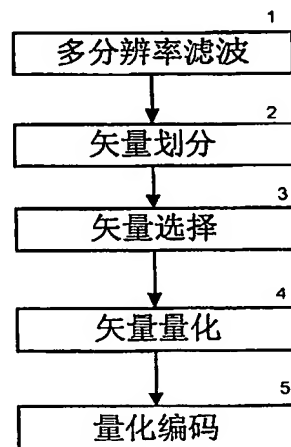
- (81) 指定国(国家): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
- (84) 指定国(地区): ARIPO专利(GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), 欧亚专利(AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), 欧洲专利(AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI专利(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

本国际公布:  
— 包括国际检索报告。

所引用双字母代码和其它缩写符号, 请参考刊登在每期PCT公报期刊起始的“代码及缩写符号简要说明”。

(54) Title: METHOD AND DEVICE OF MULTI-RESOLUTION VECTOR QUANTILIZATION FOR AUDIO ENCODING AND DECODING

(54) 发明名称: 多分辨率矢量量化的音频编解码方法及装置



- 1 MULTI-RESOLUTION FILTER  
2 VECTOR DIVIDING  
3 VECTOR SELECTION  
4 VECTOR QUANTILIZATION  
5 QUANTILIZATION AND CODING

(57) Abstract: The present invention provides a method and device of Multi-resolution vector quantization (VQ) for audio encoding and decoding used to analyze the audio signal in multi-resolution and quantize the vectors of them. Said method for encoding audio comprises the steps of adaptively filtering the input audio signal so as to gain a time-frequency filter coefficient, and output the filtered signal; dividing the vectors of the above-described filtered signal in the time-frequency plane so as to gain the vector combination; selecting the vector to be quantized; quantizing the selected vector and calculating the residual error of quantization; and transmitting the quantized coding task information as the side-information of an encoder to the audio encoder so as to quantize and encode the residual error of quantization. The invention can adaptively filter the audio signal, and adjust the resolutions of time and frequency. The hereinabove result of multi-resolution time-frequency analysis can be utilized effectively through reorganizing the filter coefficient by selecting different organizing policies. VQ may improve encoding efficiency as well as control quantizing precision simply and optimize it.

[见续页]



---

(57) 摘要

本发明提供一种多分辨率矢量量化的音频编解码方法及装置，用于对音频信号进行多分辨率分析和矢量量化；所述音频编码方法包括对输入的音频信号进行自适应滤波，获得时频滤波系数，输出滤波信号；对上述滤波信号在时频平面上进行矢量划分，获得矢量组合；选择进行矢量量化的矢量；对选择的矢量进行矢量量化，并计算量化残差；量化后的码本信息作为编码器的边信息传输到音频解码器，对量化残差进行量化编码。本发明可以自适应地对音频信号进行滤波，调整时间和频率分辨率；通过对滤波系数选择不同的组织策略重新进行组织，有效利用上述多分辨率时频分析的结果；采用矢量量化既能提高编码效率，也能方便地控制量化的精度并进行优化。